

1. Scope
 - 1.1 This specification describes the requirements for an incremental modular encoder with the optional once around index pulse, commutation signals, and open collector differential line drivers.
2. Mechanical Specifications
 - 2.1 See Figure 1
 - 2.2 Mounting requirements see Figure 2
 - 2.3 Mounting screw (Thread locker Recommended)
 - 2.3.1 M2.5 Mounting Screw Torque 18-20 ozf-in
 - 2.3.2 M3 Set Screw DIN916 Torque 100 ozf-in max.
 - 2.3.3 #2-56 Mounting Screw Torque 18-20 ozf-in
 - 2.4 Termination See Table 1
 - 2.5 Hub Bore sizing See Table 2
 - 2.6 Allowable shaft end play ±.010
 - 2.7 Shipping Weight 1.0 ozs (28 g)
 - 2.8 Hub Material: 400 series stainless steel, (ROHS Compliant)
 - 2.9 Magnet Material: Nitrile Bonded Ferrite
 - 2.10 Moment of Inertia See Table 2
 - 2.11 Vibration Specification: 3G 20-2000Hz
 - 2.12 Rotational adjustment of Alignment: ±8°
3. Electrical Specifications
 - 3.1 Code: Incremental with Commutation and once around Index Pulse Marker
 - 3.2 Counts Per Revolution See Table 3
 - 3.3 Supply Voltage
 - 3.3.1 Single 5.0V ±0.5V
 - 3.4 Current See Table 1
 - 3.5 Output Formats: See Figure 1
 - 3.5.1 Output Format: Logic Levels:
 - 3.5.1.1 Logic "1" 2.5 VDC Min.
 - 3.5.1.2 Logic "0" 0.5 VDC Max.
 - 3.5.2 Output Type:
 - 3.5.2.1 Line Driver: 20mA Sink/Source
 - 3.5.2.2 Open Collector 10mA Sink Max
 - 3.5.3 Output Format Commutation: See Figure 1
 - 3.5.3.1 /2 = 4 Pole Motor = 2 Commutation Cycles/360°
 - 3.5.3.2 /3 = 6 Pole Motor = 3 Commutation Cycles/360°
 - 3.5.3.3 /4 = 8 Pole Motor = 4 Commutation Cycles/360°
 - 3.5.3.4 /5 = 10 Pole Motor = 5 Commutation Cycles/360°
 - 3.5.3.5 /6 = 12 Pole Motor = 6 Commutation Cycles/360°
 - 3.5.4 Output Logic Levels:
 - 3.5.4.1 Logic "1" 2.5 VDC Min.
 - 3.5.4.2 Logic "0" 0.5 VDC Max.
 - 3.5.5 Output Type:
 - 3.5.5.1 Line Driver 20mA Sink/Source, 26C31
 - 3.5.5.2 Open Collector 10mA Sink Max
 - 3.6 Operating RPM
 - 3.6.1 10,000 RPM MAX
4. Environmental Specifications
 - 4.1 Operation Temperature
 - 4.1.1 -40°C - 85°C (125°C with Open Collector)
 - 4.1.2 -40°C - 125°C Non-Line Driver
 - 4.2 Storage Temperature
 - 4.2.1 -55°C - 125°C
 - 4.3 Humidity: 85% Relative (Non-Condensing)
 - 4.4 IP Rating : IP40 with Cover

Pin #	Function	Color	A,B,Index,OC	A,B,Index,LD	A,B,Index,CP,OC	A,B,Index,CP,LD
TP 1	A+	YEL	A+	A+	A+	A+
TP 2	A-	YEL/WHT		A-		A-
TP 3	B+	BLU	B+	B+	B+	B+
TP 4	B-	BLU/WHT		B-		B-
TP 5	Index+	ORN	Index+	Index+	Index+	Index+
TP 6	Index-	ORN/WHT		Index-		Index-
TP 7	U+	GRN			U+	U+
TP 8	U-	GRN/WHT			U-	U-
TP 9	V+	BRN			V+	V+
TP 10	V-	BRN/WHT			V-	V-
TP 11	W+	WHT			W+	W+
TP 12	W-	WHT/GRY			W-	W-
TP 13	+5V	RED	+5V	+5V	+5V	+5V
TP 14	Ground	BLK	Ground	Ground	Ground	Ground
TP15	NC	GRY	NA	NA	NA	NA
Current (mA)			39	65	63	105

FIG. 6 ALIGNMENT OF INDEX PULSE & RISING EDGE OF "U" COMMUTATION SIGNAL

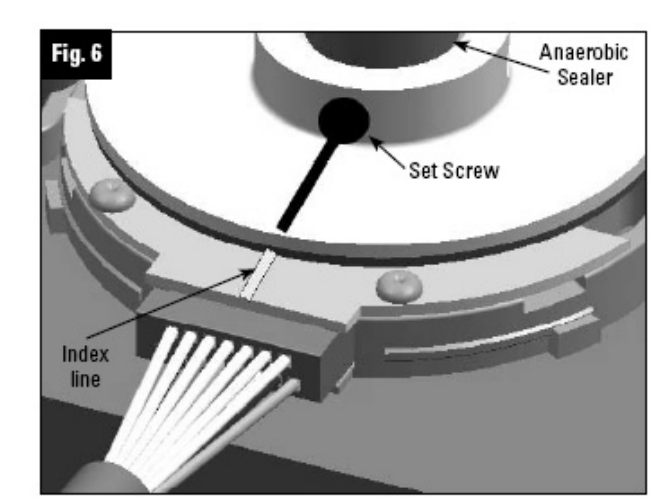
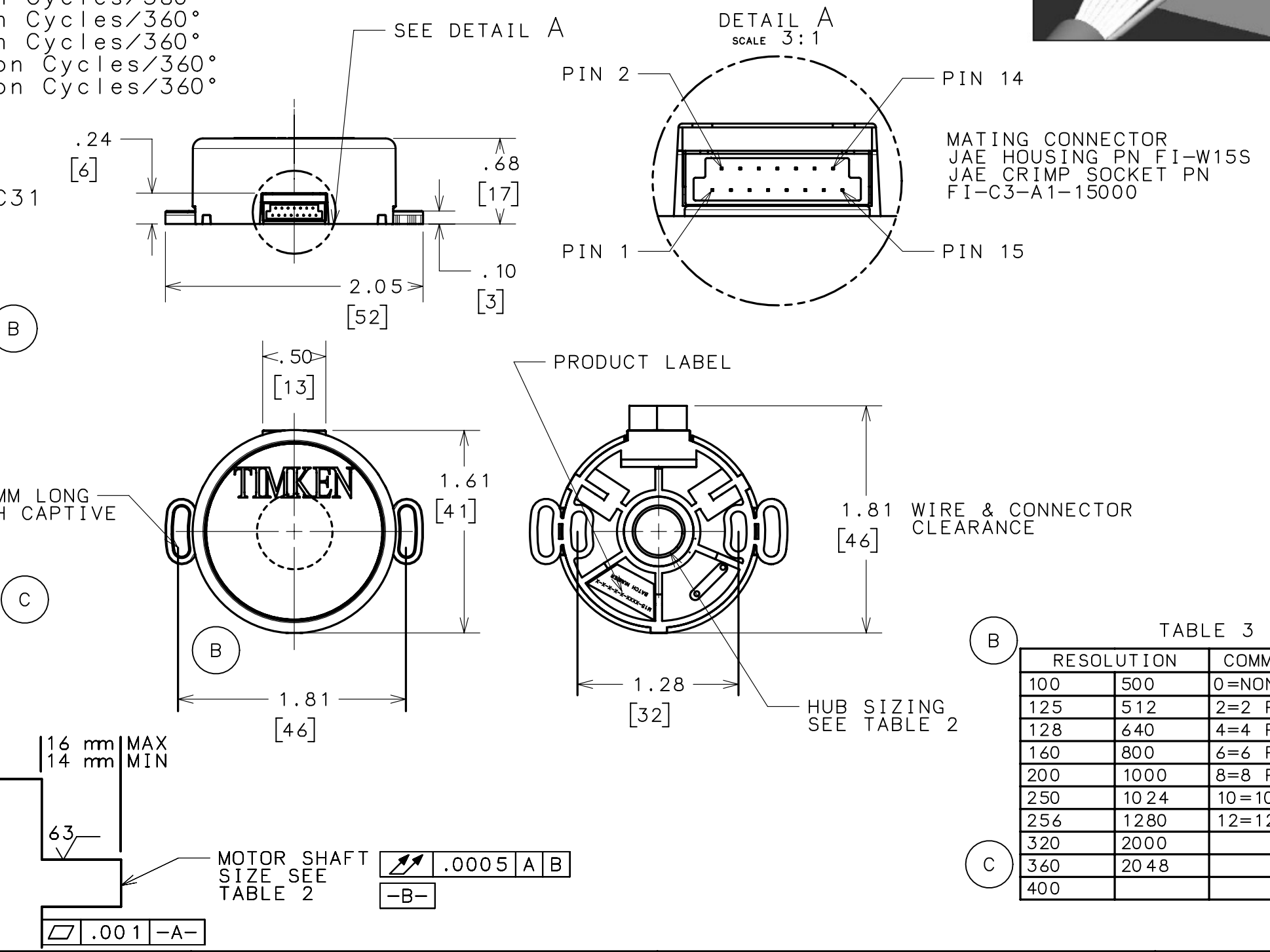


FIGURE 2



CCW VIEWING ENCODER TOP

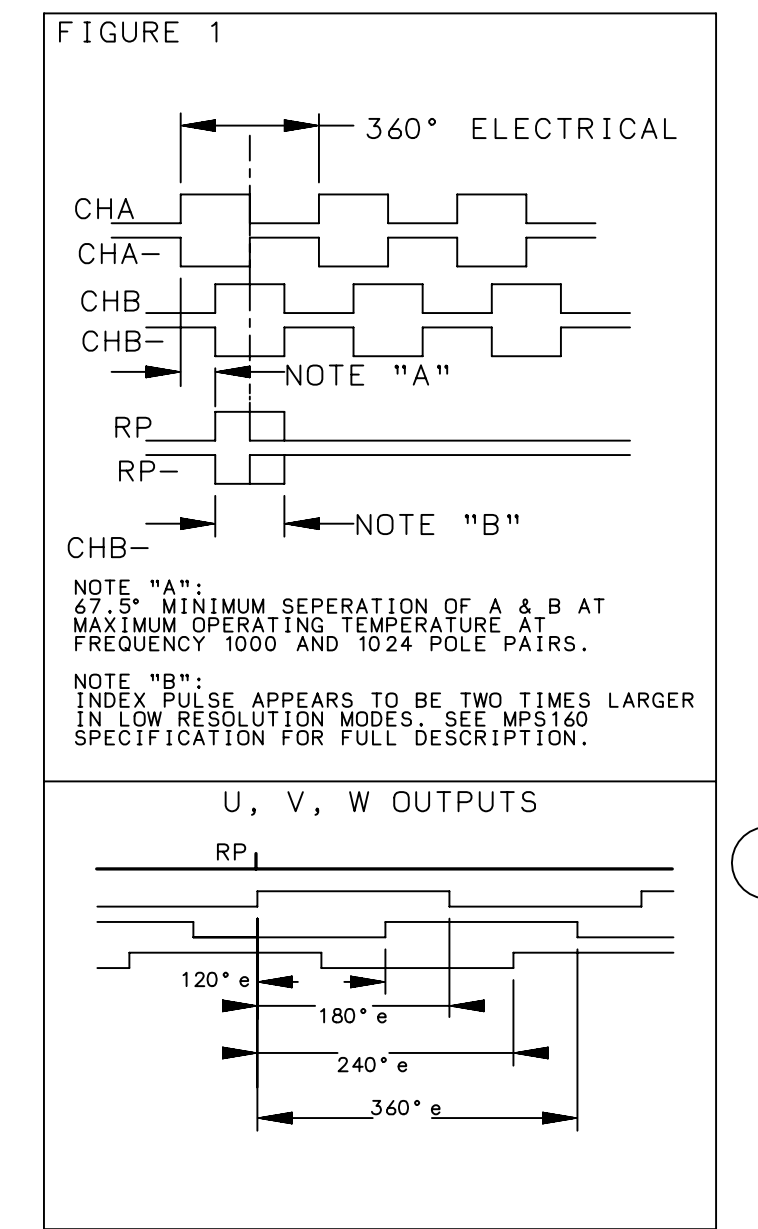


TABLE 2

HUB SIZE	HUB ID TOLERANCE	SHAFT SIZE WITH TOLERANCE	MOMENT OF INERTIA oz-in sec ²
1/8	0.1250 / 0.1256	0.1250 / 0.1245	0.1125
3/16	0.1875 / 0.1881	0.1875 / 0.1870	0.1708
5 mm	0.1968 / 0.1974	0.1968 / 0.1963	0.0984
6 mm	0.2362 / 0.2368	0.2362 / 0.2357	0.1002
1/4	0.2500 / 0.2506	0.2500 / 0.2495	0.1017
5/16	0.3125 / 0.3131	0.3125 / 0.3120	0.1038
8 mm	0.3149 / 0.3155	0.3149 / 0.3144	0.1035
3/8	0.3750 / 0.3756	0.3750 / 0.3745	0.1053
10 mm	0.3937 / 0.3943	0.3937 / 0.3932	0.1060
1/2	0.5000 / 0.5006	0.5000 / 0.4995	0.1090

TABLE 3

RESOLUTION	COMMUTATION
100	0=NONE
125	2=2 POLE*
128	4=4 POLE
160	6=6 POLE
200	8=8 POLE
250	10=10 POLE
256	12=12 POLE
320	
360	
400	

INCH

20080627	20110104	20140314	20160527	SUPERSEDES	PROJECTION	ORIGINAL SCALE	MODULAR ENCODER SPECIFICATIONS SHEET MODEL TME15
Initial release	ADDED 1/2 HUB SIZE TO TABLE 2. ADDED 10 & 12 POLE MOTOR. ADDED (125°C WITH OPEN COLLECTOR). ADDED DOTTED HOLE TO LWR LEFT DWG. ADDED TABLE 3. ADDED FIG. 6 AND NOTATION. ADDED RP LINE IN U,V,W OUTPUTS PER JOHN SANTOS	ADDED "360" TO RESOLUTION LIST ON TABLE 3. UPDATED MOMENT OF INERTIA LIST ON TABLE 2. REMOVED "SPECIAL ORDER OPTION" NOTE FOR 10mm AND 1/2 IN HUBS. ADDED PRODUCT LABEL NOTE ON FIGURE 2.	UPDATES: SET SCREW TYPE AND TORQUE, HUB MATERIAL, SUPPLY VOLTAGE, LINE DRIVER TYPE. ADDED TP 15 ON TABLE 1. CORRECTION OF SHAFT TOLERANCE FOR 0.375 INCH SHAFT ON TABLE 2 AND COLUMN NAMES ON TABLE 3. ADDED JAE MATING CONNECTOR INFORMATION.	TIMKEN			
A	B	C	D	THE TIMKEN COMPANY CANTON, OHIO, U.S.A.	T190017086		
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